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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/888,559 | 06/26/2001 | Jin Koog Shin | 054358-5004 | 9422 |

9629 7590 09/25/2002

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| EXAMINER |
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NGUYEN, TUYEN T

| ART UNIT | PAPER NUMBER |
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2832

DATE MAILED: 09/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

| | |
|--------------------------------------|------------------------------------|
| Application No. 09/888,559 | Applicant(s) Shin et al. |
| Examiner Tuyen T. Nguyen | Art Unit 2832 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on _____.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-16 is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-16 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on Jun 26, 2001 is/are a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some* c) None of:

1. Certified copies of the priority documents have been received.

2. Certified copies of the priority documents have been received in Application No. _____.

3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) Notice of References Cited (PTO-892)

4) Interview Summary (PTO-413) Paper No(s). _____

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

5) Notice of Informal Patent Application (PTO-152)

3) Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____

6) Other: _____

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DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claim 4 is objected to because of the following informalities:
 - Applicant should write out "iron Fe, nickel Ni, and cobalt Co" as --iron (Fe), nickel (Ni), and cobalt (Co)--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. Claims 5, 8 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant should clarify whether the carbon nanotube itself is formed by the claimed methods.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 6-7, 9-10 and 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art of figure 1 in view of Miyamoto [US 6,157,043].

Applicant's admitted prior art of figure 1 discloses an inductor [1] including a coil [see figure 1].

Applicant's admitted prior art of figure 1 discloses the instant claimed invention except for the inductor being synthesized from a carbon nanotube.

Miyamoto discloses a solenoid device being synthesized from a carbon nanotube [see background of the invention] wherein the nanotube being doped with boron [column 2, lines 63-64].

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It would have been obvious to one having ordinary skilled in the art at the time the invention was made to synthesized carbon nanotube for the coil of applicant's admitted prior art of figure 1, as suggested by Miyamoto, for the purpose of reducing the size of the inductor.

Regarding claim 7, Miyamoto further discloses the use of stressing the carbon nanotube to form a shape [column 2, lines 7-14].

It would have been obvious to one having ordinary skilled in the art at the time the invention was made to use the stress technique of Miyamoto in order to form the desired inductor configuration in the inductor of applicant's admitted prior art of figure 1.

Regarding claims 10 and 12, applicant's admitted prior art of figure 1 discloses the instant claimed invention except for except for coil being formed of a carbon nanotube.

Miyamoto discloses the carbon nanotube structure being mounted on a silicon substrate [27].

It would have been obvious to one having ordinary skilled in the art at the time the invention was made to form the inductor of applicant's admitted prior art of figure 1 using the mounting design of Miyamoto for the purpose of reducing size.

Regarding claims 13-15, the use of ferrite powder/layer wound have been an obvious design consideration for the purpose of enhancing the magnetic flux of the device.

Regarding claim 16, It would have been obvious to one having ordinary skilled in the art at the time the invention was made that the ratio of carbon nanotubes to fillers would regulate the inductance.

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8. Claims 2-5, 8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art of figure 1 in view of Miyamoto as applied to claims 1, 7 and 10 above, and further in view of Smalley et al. [US 6,183,714].

Applicant's admitted prior art of figure 1 in view of Miyamoto discloses the instant claimed invention except for the specific synthesis process and transition metals.

Smalley et al. discloses a method of synthesizing wires from carbon nanotubes by using a group VIII transition metal as a catalyst.

It would have been obvious to one having ordinary skilled in the art at the time the invention was made to use the synthesis design of Smalley et al. for the carbon nanotube of applicant's admitted prior art of figure, as modified, for the purpose of facilitating mounting.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tuyen T. Nguyen whose telephone number is (703) 308-0821.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Elvin Enad, can be reached at (703) 308-7619. The fax number for this Group is (703)872-9318 before the final office action, if the response is after final office action the fax number is (703)872-9319.

Any inquiry of a general nature or relating to status of this application of proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

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September 22, 2002

Troyan T. Nguyen